## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Original) A method for monitoring in-situ a chemical composition at or near a surface of a wafer during plasma etch to detect defects comprising:

providing a semiconductor substrate comprising at least one top layer, wherein the semiconductor substrate comprises at least one chemical-containing contaminant;

subjecting the semiconductor substrate to a plasma etch process, whereby at least a portion of the top layer is removed;

during the plasma etch process, detecting for a presence of the chemical-containing contaminant using one of an Auger Electron Spectroscopy system or Energy Dispersive X-ray Analysis system; and

if present, determining whether the presence of the chemical-containing contaminant exceeds a threshold limit.

2. (Original) The method of claim 1, wherein the at least one chemical-containing contaminant includes any one of carbon, calcium, sulfur, aluminum, tungsten and nickel.

3. (Original) The method of claim 1, wherein the semiconductor substrate is enclosed in a plasma etch chamber during the plasma etch process.

4. (Original) The method of claim 3, wherein the plasma etch chamber comprises at least one chemical-contaminant-sensitive detector systems.

5. (Currently amended) The ~~system~~ method of claim 1, wherein the defect detector, using one of an Auger Electron Spectroscopy system or Energy Dispersive X-ray Analysis system, indicates the presence of the one or more chemical contaminants at or below a top surface of the top layer.

6. (Currently amended) The ~~system~~ method of claim 5, wherein the Auger electron spectroscopy system indicates the presence of the one or more chemical contaminants at a top surface of the top layer and at about a 1-5 nm depth from the top layer surface.

7. (Currently amended) The ~~system~~ method of claim 5, wherein the Energy Dispersive X-ray Analysis system indicates the presence of the one or more chemical contaminants at about 1-2 Fm from the top layer surface.

8. (Currently amended) The ~~system~~ method of claim 1, further comprising suspending a semiconductor fabrication process if the chemical-containing contaminant exceeds the threshold limit.

9.-17. (Cancelled)

9 ~~18.~~ (Original) A method for monitoring in-situ a chemical composition at or near a top surface of a wafer during plasma etch to detect defects comprising:

providing a semiconductor substrate comprising at least one top layer, wherein the semiconductor substrate comprises at least one chemical-containing contaminant;

subjecting the semiconductor substrate to a plasma etch process, whereby at least a portion of the top layer is removed;

during the plasma etch process, detecting for a presence of the chemical-containing contaminant using one of an Auger Electron Spectroscopy system or Energy Dispersive X-ray Analysis system; and

if present, suspending the semiconductor fabrication process when the at least one chemical-containing contaminant exceeds a threshold limit.

10 19. (Original) The method of claim 18, wherein the at least one chemical-containing contaminant includes any one of carbon, calcium, sulfur, aluminum, tungsten and nickel.

11 20. (Currently amended) The ~~system~~ method of claim 18, wherein the Auger Electron Spectroscopy system indicates the presence of the one or more chemical contaminants at the surface of the top layer or at about a 1-5 nm depth from the top layer surface.

12 21. (Currently amended) The ~~system~~ method of claim 18, wherein the Energy Dispersive X-ray Analysis system indicates the presence of the one or more chemical contaminants at about a 1-2 Fm depth from the top layer surface.

13 22. (New) A method for monitoring in-situ a chemical composition at or near a surface of a wafer during plasma etch to detect defects comprising:

providing a semiconductor substrate comprising at least one top layer, wherein the semiconductor substrate comprises at least one chemical-containing contaminant;

subjecting the semiconductor substrate to a plasma etch process, whereby at least a portion of the top layer is removed;

during the plasma etch process, detecting for a presence of the chemical-containing contaminant and determining an amount of the chemical-containing contaminant using one of an Auger Electron Spectroscopy system or Energy Dispersive X-ray Analysis system; and

if present, determining whether the presence of the chemical-containing contaminant exceeds a threshold limit.

14 23. (New) The method of claim 1, wherein the at least one

chemical-containing contaminant includes any one of carbon, calcium, sulfur, aluminum, tungsten and nickel.

15 24. (New) The method of claim 22, wherein the semiconductor substrate is enclosed in a plasma etch chamber during the plasma etch process.

16 25. (New) The method of claim 24, wherein the plasma etch chamber comprises at least one chemical-contaminant-sensitive detector systems.

17 26. (New) The method of claim 22, wherein the defect detector, using one of an Auger Electron Spectroscopy system or Energy Dispersive X-ray Analysis system, indicates the presence of the one or more chemical contaminants at or below a top surface of the top layer.

18 27. (New) The method of claim 26, wherein the Auger electron spectroscopy system indicates the presence of the one or more chemical contaminants at a top surface of the top layer and at about a 1-5 nm depth from the top layer surface.

19 28. (New) The method of claim 26, wherein the Energy Dispersive X-ray Analysis system indicates the presence of the one or more chemical contaminants at about 1-2 Fm from the top layer surface.

20 29. (New) The method of claim 22, further comprising suspending a semiconductor fabrication process if the chemical-containing contaminant exceeds the threshold limit.